

Fly-killing Aerosol Sprays: a Useful Aid for the Freshwater Entomologist

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O'Connor (in press) describes the uses of fly-killing aerosol sprays in collecting caddisflies. However, the technique has wider applications and these will now be enumerated. During the course of several years collecting freshwater insects, adults of stoneflies, mayflies, dragonflies, water bugs, alderflies, water beetles and various Diptera were easily captured with the aid of aerosol fly sprays.

For the entomologist, freshwater research poses many difficulties. Aquatic habitats are frequently surrounded by an impenetrable growth of brambles, nettles, reeds, alders, etc. This vegetation makes the traditional methods of sweeping with a net, extremely tedious and ineffectual. Areas of soft mud, swamp and bog compound the difficulties. Perversely, the more interesting insects normally occur on the opposite bank, unattainable because of an intervening unswadable stretch of water. In addition, many insects upon observing approaching humans, either take flight or dart for cover. It is extremely difficult to pursue such individuals effectively when wading in a river or lake or clambering over rocks. Unexpected pot-holes and unstable substrates add to the hazards. It is particularly exacerbating to watch an unusual specimen moving just ahead of an outstretched net.

By accurately aiming a short spurt of spray at inaccessible adults, they may be easily knocked down either into the water or into vegetation. In the former instance, specimens are usually swept downstream by the current and they may be readily taken in a suitably positioned net. Alternatively, they may remain in an eddy or dead water and can be poked out with a net-handle. Sometimes, affected insects will fly some distance before attempting to conceal themselves under stones or in vegetation. By this time, however, their movements will have become unco-ordinated and clumsy and it is not difficult to follow them. Should they find cover, another burst of spray will usually force them to re-emerge. Specimens which do not reappear, may be found *in situ* by looking amongst the roots and stems of the relevant plants.

Fly sprays are also useful for collecting adults, either resting on walls and trees or hiding under bridges. The aerosol will normally dislodge such individuals, knocking them to the ground where they may be then collected. On windy days, the spray should be directed upwind of the required specimen to ensure that the chemical will be blown past it. It is important to avert one's face during this operation, thus preventing the spray from entering the eyes. Before the insecticide takes full effect, insects usually become uneasy and agitated. While in this condition, they will frequently emerge from unexpected hiding places. In this context, if dense vegetation, crevices, pipes, cracks, etc. are lightly sprayed, specimens will often be forced out of their hiding places.

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Agile species which are liable to evade a net while in flight, may be knocked down with an aerosol. With practice, particular specimens may be singled out of a swarm and captured without affecting nearby ones. Adults already netted but struggling, should be sprayed to prevent self-afflicted damage. Sprayed newspaper placed in the bottom of a light-trap will kill a night's catch of aquatic insects, but the author has noted that some moths were barely affected.

The use of aerosols may be criticised on several grounds. For example, they could have a devastating effect on a particular habitat or a rare species could be eliminated through over zealous collecting. In practice however, once the possible dangers are recognised, they make a valuable addition to the more traditional trapping techniques. Aerosols are relatively expensive and are quickly depleted. They can only be used therefore in small amounts and over limited areas. They should always be used with restraint, however, and should never be employed in places such as national parks and nature reserves without first obtaining official permission. Most important of all, no insects should be killed needlessly.

Pyrethrum is the normal constituent of commercial fly-killing aerosol sprays. This substance is obtained from the flowers of the grey-leaved pyrethrum *Chrysanthemum cinerariaefolium* (Munro, 1966). Pyrethrins and cinerins are the toxic principles in it. The author has found "Cooper's" fly spray to be the most useful "knockdown" aerosol. It contains pyrethrins synergised by piperonyl butoxide, the Wellcome trade-mark name being Pybuthrin (Byrne, pers. comm.). This particular fly spray is not intended as a crawling insect killer and has not been formulated for that purpose.

Pyrethrins have exceedingly low toxicity to humans and warm blooded animals (Munro, 1966; Mellanby, 1969; Reay, 1969). They degrade rapidly in sunlight and have only transient residual properties even in dark situations (Byrne, pers. comm.). Indeed, since they are unlikely to produce any permanent damage to a habitat and because they are relatively innocuous to animals, pyrethrins are utilised by water authorities to eradicate nuisance swarms of chironomids and other midges (Ridley, 1975).

Some final points must be mentioned. Towards the end of a can, spluttering can occur and large droplets may be released on to the water. These will often spread out to form a film due to the oil in which the insecticide is dissolved. Although pyrethrins is a fish poison of ancient lineage, a small patch of oil solution on the surface of a large pond or a stream will have no visible effects and the pyrethrins will be degraded rapidly (Byrne, pers. comm.). If an allergy develops, discontinue use. Make sure to direct the spray away from the face and eyes (Hickin, 1974). In the excitement of chasing a specimen, accidents can happen. Many modern aerosols have indented arrows on the valves or specially designed nozzles and these reduce the possible dangers.

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References

- Hickin, N. E. (1974). *Household insect pests*. Rentokill Library. Associate Business Programmes Ltd., London (2nd edition).
- Mellanby, K. (1969). *Pesticides and pollution*. Fontana New Naturalist. Collins, London and Glasgow.
- Munro, J. W. (1966). *Pests of stored products*. Rentokill Library. Hutchinson, London.
- O'Connor, J. P. (in press). A progress report on studies of Irish Trichoptera. *Proc. of the 2nd Int. Symp. on Trichoptera, 1977, Junk, The Hague*.
- Reay, R. C. (1969). *Insects and insecticides*. Contemporary Science Paperbacks. Oliver and Boyd, Edinburgh.
- Ridley, J. E. (1975). Problems of emergent insect species associated with water storage. *Symposium: the effects of storage on water quality, Reading 1975: 273-286*.

STRANGE BEHAVIOUR OF THE LARVAE OF MALACOSOMA NEUSTRIA L. (THE LACKEY). — On the night of 26th June 1978, I noticed a larva crawling around the rim of a street light near my house. With the aid of a net fixed to an eight-foot garden cane, I managed to retrieve it, when I found it to be a nearly full grown larva of *M. neustria*. At the time I thought little of it, but on 6th July I found another *neustria* larva purposely crawling up the column of light (the height of which is at least 16 feet). I found another larva there the following night, and one on each of the nights of the 12th and 13th July, all at approximately 2230 hours. Incidentally, the species breeds on hawthorn bushes in my area, and there is such a bush less than eight feet from the street light. Could it be that besides the moth, the larva of *neustria* is also attracted to light? — D. DEY, 9 Monmouth Close, Rainham, Gillingham, Kent, ME8 7BQ.

A NOTE FROM THE ISLE OF CANNA. — Butterflies have been flourishing here since 1975; 1976 and 1977, and the six weeks up to June 21st 1978 having provided a great deal of sunshine. *Polyommatus icarus* Rott. has been abundant; *Vanessa urticae* L. has become very common. *Argynnis aglaja* L. and *Boloria selene* D. & S. have increased, and *Pararge aegeria* L. has really taken root and for the first time produced a spring brood here in 1977. *Zygaena filipendulae* L. has been abundant, and *Z. purpuralis* Brünnich appeared in large numbers in a new locality on our southern cliffs last month after several years of extreme scarcity in its former localities.

Moths have not been so numerous, though there was a great influx of *Cerapteryx graminis* L. in August 1977. *Noctua pronuba* L. has been going through an unlamented period of recession. Need to economise on gasoil has limited the operation of the m.v. trap considerably. — J. L. CAMPBELL, Isle of Canna, Hebrides, 20.vii.1978.